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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,069	09/27/2005	Peter David Ransome	NEXG-01004US0	6314

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EXAMINER	
BALAOING, ARIEL A	

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
10/06/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/551,069	RANSOME ET AL.	
	Examiner	Art Unit	
	ARIEL BALAOING	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,5,13-16 and 22-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,5,13-16 and 22-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 March 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I (1, 2, 4, 5, 13-16, and 22-25) in the reply filed on 07/08/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Response to Arguments

1. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over ISHIKAWA et al (US 5,640,678) in view of REED et al (US 5,634,206).

Regarding claim 1, ISHIKAWA discloses a communication network (abstract) comprising: two or more cell sites [**macrocells**] for communication with wireless terminals [**mobile stations**], each cell site having multiple antennas (32-3m Figure 1; col. 3, line 54-col. 4, line 8; col. 4, line 33-43); a central site having one or more controllers [**mobile network control center, macrocell base station**], the one or more controllers comprise a selection system, the selection system carries out macro-diversity selection using a cell selector and micro-diversity selection using an antenna

selector (col. 3, line 54-col. 4, line 8; col. 4, line 33-43; macro diversity represented by handover between cells and micro diversity represented by antenna selection based on signal measurements); a switch system through which receive signals from each of the multiple receive antennas of each cell site are connected to the selection system, wherein based on analysis, at the selection system at the central site, of the receive signals from each of the multiple receive antennas of each site: (a) the cell selector performs the macro-diversity selection, and (b) the antenna selector performs the micro-diversity selection, and selects one of the receive antennas of the multiple receive antennas of the selected cell site (col. 4, line 8-62; switching between antennas of a microcell and handover to a macrocell based on received measurements comparisons.). Although ISHIKAWA disclose the use of diversity selection, ISHIKAWA does not expressly disclose using macro-diversity technique to counter macro spatial effects in the communication network; and using a micro-diversity technique to counter micro spatial effects in the communications network, wherein the antenna selector selects one of the receive antennas. In the same field of endeavor, REED discloses using macro-diversity technique to counter macro spatial effects in the communication network (col. 1, line 13-27; macro diversity (such as handover used to counter fading); and an antenna selector that uses a micro-diversity technique to counter micro spatial effects in the communications network, wherein the antenna selector selects one of the receive antennas of the multiple receive antennas of a selected site (col. 1, line 13-27; col. 3, line 25-60; micro diversity (i.e. receive antenna selection) used for antenna selection). Therefore it would have been obvious to a person of ordinary skill in the art

at the time the invention was made to modify ISHIKAWA to include the teachings of REED, since REED states that using macro (i.e. handover) and micro diversity (i.e. receive antenna selection) would improve quality of a received signal (see col. 1, line 19-24).

Regarding claim 2, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. ISHIKAWA further discloses wherein: the switch system presents all receive signals from the multiple receive antennas at each cell site to the selection system at the central site (Figure 6; col. 4, line 9-27; transmission signal from mobile station is received and processed).

Regarding claim 16, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA and REED further discloses wherein: signals of the multiple receive antennas are received at the antenna selector (ISHIKAWA – col. 4, line 8-43; REED - col. 3, line 25-60); and the antenna selector selects the one receive antenna of the multiple receive antennas by selecting one of the signals of the multiple receive antennas by selecting one of the signals of the multiple receive antennas and passing the selected one of the signals of the multiple receive antennas to the cell selector (ISHIKAWA – col. 4, line 8-43, REED - col. 3, line 25-60).

4. Claims 4, 5, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over ISHIKAWA et al (US 5,640,678) in view of REED et al (US 5,634,206) and further in view of TOSHIMITSU et al (US 2001/0004604 A1).

Regarding claim 4, see the rejection of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of ISHIKAWA and REED does not expressly disclose wherein the one or more controllers include transceivers that transmit and receive RF signals according to respective protocols that are used by the wireless terminals. TOSHIMITSU discloses wherein one or more controllers include transceivers that transmit and receive RF signals according to respective protocols that are used by the wireless terminals (Figure 3, 4; paragraph 51-53, 58-60; transmission and reception between base stations and mobile stations). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of ISHIKAWA and REED to include the TOSHIMITSU, since communication RF signals using various protocol is conventional in the art and provides wireless communication based on capabilities of a system.

Regarding claim 5, see the rejection of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of ISHIKAWA and REED does not expressly disclose wherein the central site is connected to the two or more cell sites via optical fibers, and each cell site comprises an optical transmitter and an optical receiver. TOSHIMITSU discloses wherein a central site is connected to two or more cell sites **10** via optical fibers, and each cell site comprises an optical transmitter and an optical receiver (Figure 3, 4; paragraph 51-53, 58-60). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of ISHIKAWA and REED to include the teachings

of TOSHIMITSU, since optical fiber connections is a known transmission means that provides fast and reliable propagation of data.

Regarding claim 13, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA and REED further discloses wherein the multiple receive antennas of the at least one of the cell sites include first and second receive antennas of one of the cell sites (Figure 6). However, the combination of ISHIKAWA and REED does not expressly disclose wherein the at least one of the cell sites includes a first electric-to-optical converter associated with the first receive antenna, and a second electric-to-optical converter associated with the second receive antenna, the communications network further comprising: an optoelectronic port having at least first and second optical receivers; a first optical fiber coupled between the first optical receiver and the first electric-to-optical converter to carry a receive signal of the first receive antenna; and a second optical fiber coupled between the second optical receiver and the second electric-to-optical converter to carry a receive signal of the second receive antenna. In the same field of endeavor, TOSHIMITSU discloses wherein multiple receive antennas **52, 56** of at least one cell site **10** includes first and second receive antennas of one of the cell sites, and the at least one of the cell sites includes a first electric-to-optical converter **50, 54** associated with the first receive antenna, and a second electric-to-optical converter associated with the second receive antenna (Figures 3, 4, 7), the communications network further comprising: an optoelectronic port having at least first and second optical receivers (paragraph 52, 53, 58, 59; connection point of transmission medium); a first optical fiber

58 coupled between the first optical receiver and the first electric-to-optical converter to carry a receive signal of the first receive antenna (paragraph 52, 53, 58, 59; transmission medium between receive antenna and base station); and a second optical fiber coupled between the second optical receiver and the second electric-to-optical converter to carry a receive signal of the second receive antenna (paragraph 51-53, 58, 59; transmission medium between receive antenna and base station). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of ISHIKAWA and REED to include the teachings of TOSHIMITSU, since such a modification allows conventional conversion techniques to be used in over the air signaling between base stations and mobile stations.

Regarding claim 14, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA, REED, and TOSHIMITSU further discloses further comprising: a transmit antenna **36, 40** at the at least one of the cell sites (TOSHIMITSU – Figure 3, 4, 7; paragraph 52, 53, 58, 59); an optical-to-electric **34, 38** converter associated with the transmit antenna (TOSHIMITSU – paragraph 52, 53, 58, 59; signal converter); and an optical transmitter associated with the optoelectronic port (TOSHIMITSU – paragraph 52, 53, 58, 59); wherein the optical transmitter is coupled to the optical-to-electric converter of the transmit antenna to carry a transmit signal of the transmit antenna (TOSHIMITSU – paragraph 52, 53, 58, 59; transmission medium between receive antenna and base station).

Regarding claim 15, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA, REED, and

TOSHIMITSU further discloses further compromising: a transmit antenna at the at least on of the cell sites (ISHIKAWA – Figure 6; TOSHIMITSU – Figures 3, 7); an optical-to-electric converter associated with the transmit antenna (TOSHIMITSU – Figures 3, 7; O/E converter); an optical transmitter associated with the optoelectronic port (TOSHIMITSU – Figures 3, 7); wherein the optical transmitter is coupled to the optical-to-electric converter of the transmit antenna to carry a transmit signal of the transmit antenna (TOSHIMITSU – paragraph 51, 53). Although TOSHIMITSU discloses the use of optical fiber for both the transmit antenna and receive antenna, the combination of ISHIKAWA, REED, and TOSHIMITSU does not expressly disclose wherein signals of a transmit antenna are shared at least in part by the first optical fiber with the receive signal of the first receive antenna. However, the examiner takes official notice that providing transmit and receive signals using a shared transmission medium is well known and conventional in the art (i.e. bi-directional transmission medium) and therefore would be obvious to modify in this way by one of ordinary skill. This benefits a system by allowing a reduced number of connections for uplink and downlink communication between transmitter, receiver, and a system.

5. Claims 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over ISHIKAWA et al (US 5,640,678) in view of REED et al (US 5,634,206) and further in view of DIENER (US 2004/0047324).

Regarding claim 22, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of ISHIKAWA and REED does not expressly disclose wherein: the one or more controllers are provided in

a network interface card. DIENER discloses wherein: the one or more controllers are provided in a network interface card (paragraph 156). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of ISHIKAWA and REED to include the teachings of DIENER, since such a modification would allow a conventional processor to be used for analyzing received data within a WLAN system.

Regarding claim 23, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA, REED, and DIENER further discloses wherein the network interface card comprises a MAC processor for analyzing packets received from each cell site according to a wireless LAN protocol (paragraph 156).

Regarding claim 24, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. The combination of ISHIKAWA, REED, and DIENER further discloses wherein: the wireless LAN protocol is IEEE 802.11 (paragraph 156).

Regarding claim 25, see the rejections of the parent claim concerning the subject matter this claim is dependent upon. However, the combination of ISHIKAWA and REED does not expressly disclose further comprising: at least one network interface card, the at least one network interface card comprises the one or more controllers, a baseband modem for conversion of digital signals to and from quadrature form, a stage for modulation and demodulation of quadrature signals, and an input/output port for connection to a server. In the same field of endeavor, DIENER discloses at least one

network interface card, the at least one network interface card comprises the one or more controllers, a baseband modem for conversion of digital signals to and from quadrature form, a stage for modulation and demodulation of quadrature signals, and an input/output port for connection to a server (paragraph 112, 155-157; QAM modulation (quadrature amplitude modulation)). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the combination of ISHIKAWA and REED to include the teachings of DIENER, since such a modification would allow a conventional processor to be used for analyzing received data within a WLAN system.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARIEL BALAOING whose telephone number is (571)272-7317. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, V. Paul Harper can be reached on (571) 272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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